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INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for September, 1887, and is based upon reports of regular and voluntary observers of both countries. Descriptions of the storms which appeared over the north Atlantic Ocean during the month are also given, and their approximate paths shown on chart i, on which also appears the distribution of icebergs and field ice reported, and the limits of fog-belts to the westward of the fortieth meridian. In tracing the centres of the paths of these storms, data from the reports of two hundred and eighteen vessels have been used. The severest storms of the month over the north Atlantic attended the passage of two cyclones which are traced from northeast of the Windward Islands over the Banks of Newfoundland.

There was an almost entire absence of ice in the vicinity of the Newfoundland Banks, while to the northward of Newfoundland and in the Strait of Belle Isle the aggregate quantity observed slightly exceeded that reported for the preceding month.

Fog was more frequently encountered in the vicinity of Newfoundland than during August, and the southern and eastern limits of the fog-belts are somewhat extended.

The number of areas of low pressure for this month is about the average for September.

The month was warmer than the average September by from 2° to 4° in the Rocky Mountain districts; in the lower Mississippi Valley, west Gulf states, and on the Pacific coast the mean temperature was about normal, while over the greater part of the country east of the Mississippi the month was decidedly colder than the average.

Marked deficiencies in the monthly precipitation occurred in the south Atlantic and west Gulf states. In the Rio Grande Valley, southern plateau, and northern slope the precipitation was decidedly above the average. In all other districts it was near the normal.

In the preparation of this REVIEW the following data, received up to October 20, 1887, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at one hundred and thirty-three Signal Service stations and twenty-three Canadian stations, as telegraphed to this office; one hundred and seventy-two monthly journals and one hundred and sixty-nine monthly means from the former and twenty-three monthly means from the latter; two hundred and eighty monthly registers from voluntary observers; sixty monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Illinois, Indiana, Kansas, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New England, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, and Tennessee; and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean pressure for September, 1887, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

The range of mean pressure for September, 1887, over the United States is .35, Yuma, Ariz., reporting the least, 29.77, while eastward of the Rocky Mountains four stations, viz., Toledo, Ohio, Washington City, Hatteras, N. C., and Atlantic City, N. J., report a mean of 30.12, the maximum for the month. From chart ii it will be seen that the region of least mean pressure, indicated by the isobar of 29.8, comprises a small area including parts of the southern plateau and south Pacific coast region, and that the mean pressure is greatest over the region extending from the central and upper portions of the Mississippi Valley eastward to the Atlantic coast, there being two areas of barometric maxima shown by the isobar of 30.1—one of which covers a part of the Lake region, and the other the states bordering on the Atlantic from Massachusetts to South Carolina. The barometric means exceed 30.0 in all parts of the country, with the exception of the Rocky Mountain region and Maritime Provinces of Canada.

As compared with the mean pressure of the preceding month, an increase is shown at all Signal Service and Canadian stations, except the following: Fort Canby, Wash., Swift Current and Minnedosa, N. W. T.; at these stations the means for the two months coincide. The increase over the August means is most marked in the middle Rocky Mountain region, and from the lower lakes and New England southward to the Gulf, where it generally ranges from .10 to .15; over the interior portions of the country the increase varies from .05 to .10, and along the Pacific coast from .01 to .05.

The departures from the normal for the various stations are given in the tables of miscellaneous meteorological data; they are also graphically exhibited on chart iii by lines connecting stations of normal or equal abnormal values. The mean pressure for this month is normal or slightly below over the Maritime Provinces of Canada, in the lower Mississippi valley and adjacent states, along the immediate southwestern border from the mouth of the Rio Grande to the Pacific, and in northern California and southern Oregon; in these districts the departures nowhere exceed .03. In all other portions of the country the mean pressure is above the normal, the departures being greatest over the region from the upper Missouri valley eastward to the lower lakes, where they range from .05 to .10.

BAROMETRIC RANGES.

The monthly barometric ranges at the various Signal Service stations are also given in the tables of miscellaneous meteorological data. In the extreme northwest the monthly ranges exceed the normal September ranges by about .2, while on the north Pacific coast they are about .1 less than the normal. At